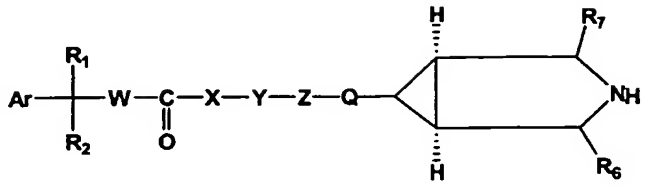
WE CLAIM:

1. Compounds having the structure of Formula I:



Formula - I

and their pharmaceutically acceptable salts, pharmaceutically acceptable solvates, esters, enantiomers, diastereomers, N-oxides, polymorphs, or metabolites, wherein

Ar represents an aryl or a heteroaryl ring having 1-2 hetero atoms, the aryl or heteroaryl rings may be unsubstituted or substituted by one to three substituents independently selected from lower alkyl (C_1-C_4), lower perhalo alkyl (C_1-C_4), cyano, hydroxy, nitro, lower alkoxy (C_1-C_4), lower perhalo alkoxy (C_1-C_4), unsubstituted amino, N-lower alkyl (C_1-C_4) or -aryl amino, amino carbonyl, or N-lower alkyl (C_1-C_4) or -aryl amino carbonyl;

R_1 represents a hydrogen, hydroxy, hydroxy methyl, substituted or unsubstituted amino, alkoxy, carbamoyl or halogen;

R_2 represents alkyl, C_3-C_7 cycloalkyl ring, a C_3-C_7 cyclo alkenyl ring, an aryl, heterocyclic or a heteroaryl ring having 1 to 2 hetero atoms; the aryl, heteroaryl, heterocyclic or a cycloalkyl ring may be unsubstituted or substituted by one to three substituents independently selected from lower alkyl (C_1-C_4), lower perhalo alkyl (C_1-C_4), cyano, hydroxy, nitro, lower alkoxycarbonyl, halogen, lower alkoxy (C_1-C_4), lower perhalo alkoxy (C_1-C_4), unsubstituted amino, N-lower alkyl (C_1-C_4) or –aryl amino, amino carbonyl, or N-lower alkyl (C_1-C_4) or –aryl amino carbonyl;

W represents $(CH_2)_p$, wherein p represents 0 to 1;

X represents an oxygen, sulphur, -NR or no atom, wherein R represents hydrogen or (C_1-$_6$) alkyl;

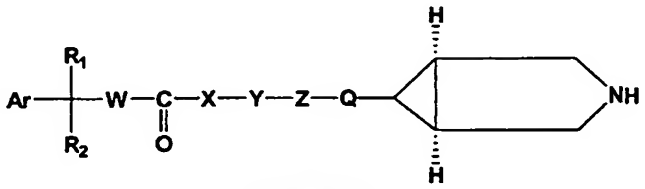
Y represents CHR_5CO or $(CH_2)q$ wherein R_5 represents hydrogen or methyl and q represents 0 to 4;

Z represents oxygen, sulphur, or NR_{10}, wherein R_{10} represents hydrogen or C_{1-6} alkyl;

Q represents $-(CH_2)_n-$, wherein n represents 0 to 4, CHR_8, wherein R_8 represents H, OH, C_{1-6}, alkyl, C_{1-6} alkenyl, or C_{1-6} alkoxy, or Q represents CH_2CHR_9, wherein R_9 represents H, OH, lower alkyl (C_1-C_4) or lower alkoxy (C_1-C_4); and

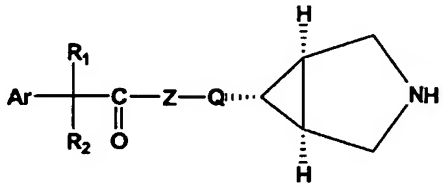
R_6 and R_7 are independently selected from H, CH_3, COOH, $CONH_2$, NH_2, and CH_2NH_2.

2. The compounds according to claim 1 having the structure of Formula II and their pharmaceutically acceptable salts, pharmaceutically acceptable solvates, esters, enantiomers, diastereomers, N-oxides, polymorphs, or metabolites.



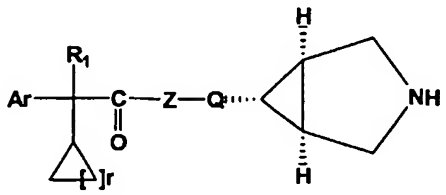
Formula II

3. The compounds according to claim 1 having the structure of Formula III and their pharmaceutically acceptable salts, pharmaceutically acceptable solvates, esters, enantiomers, diastereomers, N-oxides, polymorphs, or metabolites.



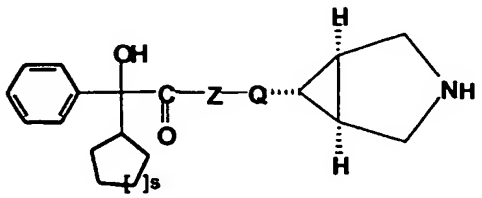
Formula III

4. The compounds according to claim 1 having the structure of Formula IV and their pharmaceutically acceptable salts, pharmaceutically acceptable solvates, esters, enantiomers, diastereomers, N-oxides, polymorphs, or metabolites, wherein r is 1 to 4.



Formula IV

5. The compounds according to claim 1 having the structure of Formula V, and their pharmaceutically acceptable salts, esters, enantiomers, N-oxides, or metabolites; wherein s represents 1 to 2.



Formula V

6. A compound selected form the group consisting of

(2R,2S) (1α,5α,6α)-N-[3-azabicyclo[3.1.0]hexyl-6-(aminomethyl)-yl]-2-hydroxy-2-cyclopentyl-2-phenyl acetamide (Compound 1);

(2R,2S) (1α,5α,6α)-N-[3-azabicyclo[3.1.0]hexyl-6-(aminomethyl)-yl]-2-hydroxy-2-cyclopentyl-2-phenyl acetamide hydrochloride salt (Compound 2);

(2R)-(1α,5α,6α)-N-[3-azabicyclo[3.1.0]hexyl-6-(aminomethyl)-yl]-2-hydroxy-2-cyclopentyl 2-phenyl acetamide (Compound 3);

(2R)-(1α,5α,6α)-N-[3-azabicyclo[3.1.0]hexyl-6-(aminomethyl)-yl]-2-hydroxy-2-cyclopentyl 2-phenyl acetamide hydrochloride salt (Compound 4);

(2S)-(1α,5α,6α)-N-[3-azabicyclo[3.1.0]hexyl-6-(aminomethyl)-yl]-2-hydroxy-2-cyclopentyl 2-phenyl acetamide (Compound 5);

(2S)-(1α,5α,6α)-N-[3-azabicyclo[3.1.0]hexyl-6-(aminomethyl)-yl]-2-hydroxy-2-cyclopentyl 2-phenyl acetamide hydrochloride salt (Compound 6);

(2R, 2S) (1α,5α,6α)-N-[3-azabicyclo[3.1.0]hexyl-6-(aminomethyl)-yl]-2-methoxy-2-cyclopentyl-2-phenyl acetamide (Compound 7);

(2R, 2S) (1α,5α,6α)-N-[3-azabicyclo[3.1.0]hexyl-6-(aminomethyl)-yl]-2-hydroxy-2-cycloheptyl-2-phenyl acetamide (Compound 8);

(2R, 2S) (1α,5α,6α)-N-[3-azabicyclo[3.1.0]hexyl-6-(aminomethyl)-yl]-2-hydroxy-2-cyclobutyl-2-phenyl acetamide (Compound 9);

(2R, 2S) (1α,5α,6α)-N-[3-azabicyclo[3.1.0]hexyl-6-(aminomethyl)-yl]-2-hydroxy-2-cyclobutyl-2-phenyl acetamide tartarate salt (Compound 10);

(2R) (1α,5α,6α)-N-[3-azabicyclo[3.1.0]hexyl-6-(aminomethyl)-yl]-2-hydroxy-2-(3,3-difluorocyclopentyl)-2-phenyl acetamide (Compound 11);

(2R, 2S) (1α,5α,6α)-N-[3-azabicyclo[3.1.0]hexyl-6-(aminomethyl)-yl]-2-hydroxy-2-(3-fluorocyclopentyl)-2-phenyl acetamide (Compound 12);

(2R, 2S) (1α,5α,6α)-N-[3-azabicyclo[3.1.0]hexyl-6-(aminomethyl)-yl]-2-hydroxy-2-(3,3-difluorocyclopentyl)-2-phenyl acetamide (Compound 13);

(2R, 2S) (1α,5α,6α)-N-[3-azabicyclo[3.1.0]hexyl-6-(aminomethyl)-yl]-2-hydroxy-2-(3,3-difluorocyclopentyl)-2-phenyl acetamide tartarate salt (Compound 14);

(2R, 2S) (1α,5α,6α)-N-[3-azabicyclo[3.1.0]hexyl-6-(aminomethyl)-yl]-2-hydroxy-2,2-diphenyl acetate (Compound 15);

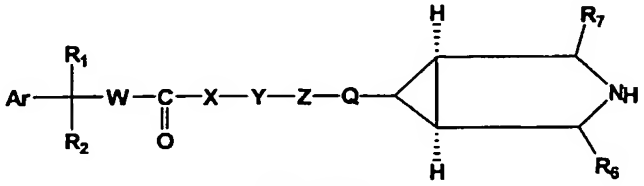
(2R, 2S) (1α,5α,6α)-N-[3-azabicyclo[3.1.0]hexyl-6-(aminomethyl)-yl]-2-hydroxy-2,2-diphenyl acetamide (Compound 16);

(2R, 2S) (1α,5α,6α)-N-[3-azabicyclo[3.1.0]hexyl-6-(aminomethyl)-yl]-2-hydroxy-2-cyclohexyl-2-phenyl acetamide (Compound 17) and

(2R, 2S) (1α,5α,6α)-N-[3-azabicyclo[3.1.0]hex-6-ylmethyl)-2-cyclopentyl-2-hydroxy-N-methyl-2-phenyl acetamide (Compound 18).

7. A pharmaceutical composition comprising a therapeutically effective amount of a compound as defined in claim 1, 2, 3, 4, 5 or 6 together with pharmaceutically acceptable carriers, excipients or diluents.

8. A method for treatment or prophylaxis of an animal or a human suffering from a disease or disorder of the respiratory, urinary and gastrointestinal systems, wherein the disease or disorder is mediated through muscarinic receptors, comprising administering to said animal or human, a therapeutically effective amount of a compound having the structure of Formula I,



Formula I

its pharmaceutically acceptable salts, pharmaceutically acceptable solvates, esters, enantiomers, diastereomers, N-oxides, polymorphs or metabolites, wherein

Ar represents an aryl or a heteroaryl ring having 1-2 hetero atoms, wherein the aryl or heteroaryl rings may be unsubstituted or substituted by one to three substituents independently selected from lower alkyl (C_1-C_4), lower perhalo alkyl (C_1-C_4), cyano, hydroxy, nitro, lower alkoxy (C_1-C_4), lower perhalo alkoxy (C_1-C_4), unsubstituted amino, N-lower alkyl (C_1-C_4) or -aryl amino, amino carbonyl, or N-lower alkyl (C_1-C_4) or -aryl amino carbonyl;

R_1 represents a hydrogen, hydroxy, hydroxy methyl, amino, alkoxy , carbamoyl or halogen;

R_2 represents alkyl, C_3-C_7 cycloalkyl ring, a C_3-C_7 cyclo alkenyl ring, an aryl, heterocyclic or a heteroaryl ring having 1 to 2 hetero atoms; the aryl, heteroaryl, heterocyclic or a cycloalkyl ring may be unsubstituted or substituted by one to three substituents independently selected from lower alkyl (C_1-C_4), lower perhalo alkyl (C_1-C_4), cyano, hydroxy, nitro, lower alkoxycarbonyl, halogen, lower alkoxy (C_1-C_4), lower perhalo alkoxy (C_1-C_4), unsubstituted amino, N-lower alkyl (C_1-C_4) or –aryl amino, amino carbonyl, or N-lower alkyl (C_1-C_4) or –aryl amino carbonyl;

W represents $(CH_2)_p$, wherein p represents 0 to 1;

X represents an oxygen, sulphur, -NR or no atom, wherein R represents hydrogen or (C_1-$_6$) alkyl;

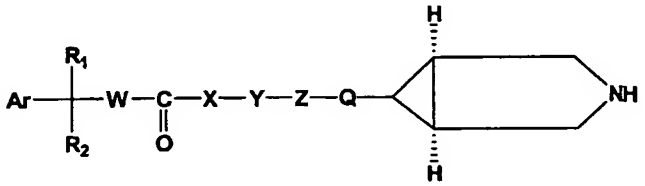
Y represents CHR_5CO or $(CH_2)q$ wherein R_5 represents hydrogen or methyl and q represents 0 to 4;

Z represents oxygen, sulphur, or NR_{10}, wherein R_{10} represents hydrogen or $C_{1\text{-}6}$ alkyl;

Q represents $-(CH_2)_n-$, wherein n represents 0 to 4, CHR_8, wherein R_8 represents H, OH, $C_{1\text{-}6}$, alkyl, C_1-$_6$ alkenyl, C_1-$_6$ alkoxy, or Q represents CH_2CHR_9, wherein R_9 represents H, OH, lower alkyl (C_1-C_4) or lower alkoxy (C_1-C_4); and

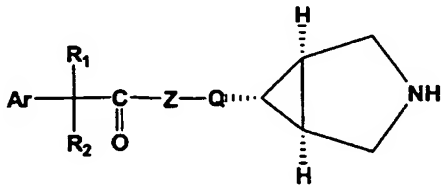
R_6 and R_7 are independently selected from H, CH_3, COOH, $CONH_2$, NH_2, CH_2NH_2.

9. The method according to claim 8 for treatment or prophylaxis of an animal or a human suffering from a disease or disorder of the respiratory, urinary and gastrointestinal systems, wherein the disease or disorder is mediated through muscarinic receptors, comprising administering to said animal or human, a therapeutically effective amount of a compound having the structure of Formula II, its pharmaceutically acceptable salts, pharmaceutically acceptable solvates, esters, enantiomers, diastereomers, N-oxides, polymorphs or metabolites.



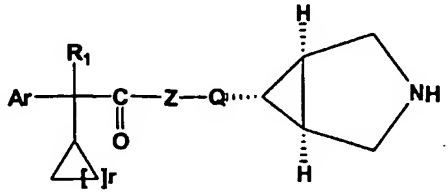
Formula II

10. The method according to claim 8 for treatment or prophylaxis of an animal or a human suffering from a disease or disorder of the respiratory, urinary and gastrointestinal systems, wherein the disease or disorder is mediated through muscarinic receptors, comprising administering to said animal or human, a therapeutically effective amount of a compound having the structure of Formula III, its pharmaceutically acceptable salts, pharmaceutically acceptable solvates, esters, enantiomers, diastereomers, N-oxides, polymorphs, prodrugs or metabolites.



Formula III

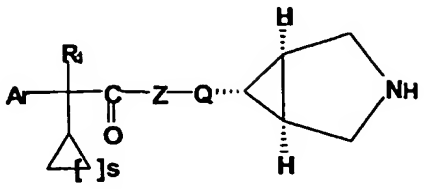
11. The method according to claim 8 for treatment or prophylaxis of an animal or a human suffering from a disease or disorder of the respiratory, urinary and gastrointestinal systems, wherein the disease or disorder is mediated through muscarinic receptors, comprising administering to the said animal or human, a therapeutically effective amount of a compound having the structure of Formula IV, its pharmaceutically acceptable salts, pharmaceutically acceptable solvates, esters, enantiomers, diastereomers, N-oxides, polymorphs, prodrugs or metabolites, wherein r is 1 to 4.



Formula IV

12. The method according to claim 8 for treatment or prophylaxis of an animal or a human suffering from a disease or disorder of the respiratory, urinary and gastrointestinal systems, wherein the disease or disorder is mediated through muscarinic receptors, comprising administering to said animal or human, at least one therapeutically effective amount of a compound having the structure of Formula V, its pharmaceutically acceptable salts, pharmaceutically acceptable solvates, esters,

enantiomers, diastereomers, N-oxides, polymorphs or metabolites, wherein s represents 1 to 2.



Formula V

13. The method according to claim 8 wherein the disease or disorder is urinary incontinence, lower urinary tract symptoms (LUTS), bronchial asthma, chronic obstructive pulmonary disorders (COPD), pulmonary fibrosis, irritable bowel syndrome, obesity, diabetes or gastrointestinal hyperkinesis.

14. The method according to claim 9 wherein the disease or disorder is urinary incontinence, lower urinary tract symptoms (LUTS), bronchial asthma, chronic obstructive pulmonary disorders (COPD), pulmonary fibrosis, irritable bowel syndrome, obesity, diabetes or gastrointestinal hyperkinesis.

15. The method according to claim 10 wherein the disease or disorder is urinary incontinence, lower urinary tract symptoms (LUTS), bronchial asthma, chronic obstructive pulmonary disorders (COPD), pulmonary fibrosis, irritable bowel syndrome, obesity, diabetes or gastrointestinal hyperkinesis.

16. The method according to claim 11 wherein the disease or disorder is urinary incontinence, lower urinary tract symptoms (LUTS), bronchial asthma, chronic obstructive pulmonary disorders (COPD), pulmonary fibrosis, irritable bowel syndrome, obesity, diabetes or gastrointestinal hyperkinesis.

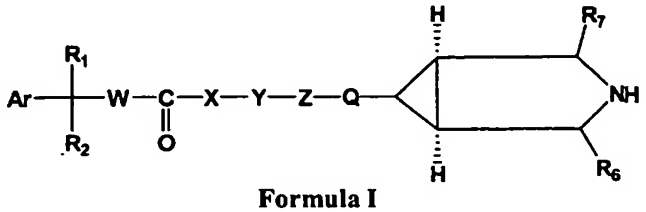
17. The method according to claim 12 wherein the disease or disorder is urinary incontinence, lower urinary tract symptoms (LUTS), bronchial asthma, chronic obstructive pulmonary disorders (COPD), pulmonary fibrosis, irritable bowel syndrome, obesity, diabetes or gastrointestinal.

18. The method for treatment or prophylaxis of an animal or a human suffering from a disease or disorder of the respiratory, urinary and gastroinstestinal systems, wherein the disease or disorder is mediated through muscarinic receptors, comprising

administering to said animal or human, a therapeutically effective amount of the pharmaceutical composition according to claim 7.

19. The method according to claim 18 wherein the disease or disorder urinary incontinence, lower urinary tract symptoms (LUTS), bronchial asthma, chronic obstructive pulmonary disorders (COPD), pulmonary fibrosis, irritable bowel syndrome, obesity, diabetes or gastrointestinal hyperkinesis.

20. A method of preparing a compound of Formula I,



Formula I

and its pharmaceutically acceptable salts, pharmaceutically acceptable solvates, esters, enantiomers, diastereomers, N-oxides, polymorphs or metabolites, wherein

Ar represents an aryl or a heteroaryl ring having 1-2 hetero atoms, wherein the aryl or heteroaryl rings may be unsubstituted or substituted by one to three substituents independently selected from lower alkyl (C_1-C_4), lower perhalo alkyl (C_1-C_4), cyano, hydroxy, nitro, lower alkoxy (C_1-C_4), lower perhalo alkoxy (C_1-C_4), unsubstituted amino, N-lower alkyl (C_1-C_4) or –aryl amino, amino carbonyl, or N-lower alkyl (C_1-C_4) or –aryl amino carbonyl;

R_1 represents a hydrogen, hydroxy, hydroxy methyl, amino, alkoxy , carbamoyl or halogen;

R_2 represents alkyl, C_3-C_7 cycloalkyl ring, a C_3-C_7 cyclo alkenyl ring, an aryl, heterocyclic or a heteroaryl ring having 1 to 2 hetero atoms selected from a group consisting of oxygen, sulphur and nitrogen atoms; the aryl, heteroaryl, heterocyclic or a cycloalkyl ring may be unsubstituted or substituted by one to three substituents independently selected from lower alkyl (C_1-C_4), lower perhalo alkyl (C_1-C_4), cyano, hydroxy, nitro, lower alkoxycarbonyl, halogen, lower alkoxy (C_1-C_4), lower perhalo alkoxy (C_1-C_4), unsubstituted amino, N-lower alkyl (C_1-C_4) or –aryl amino, amino carbonyl, or N-lower alkyl (C_1-C_4) or –aryl amino carbonyl;

W represents $(CH_2)_p$, wherein p represents 0 to 1;

X represents an oxygen, sulphur, -NR or no atom, wherein R represents hydrogen or (C_1-$_6$) alkyl;

Y represents CHR_5CO or $(CH_2)q$ wherein R_5 represents hydrogen or methyl and q represents 0 to 4;

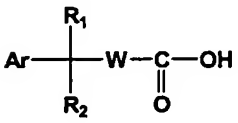
Z represents oxygen, sulphur, NR_{10}, wherein R_{10} represents hydrogen, C_{1-6} alkyl;

Q represents $(CH_2)_n$ (wherein n represents 0 to 4), CHR_8 (wherein R_8 represents H, OH, C_{1-6}, alkyl, C_{1-6} alkenyl, C_{1-6} alkoxy) or CH_2CHR_9 (wherein R_9 represents H, OH , lower alkyl (C_1-C_4) or lower alkoxy (C_1-C_4)); and

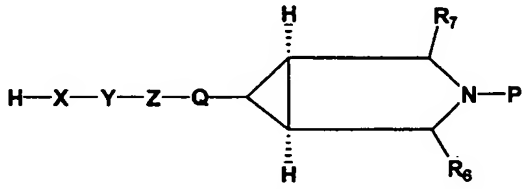
R_6 and R_7 are independently selected from H, CH_3, COOH, $CONH_2$, NH_2, CH_2NH_2;

said method comprising:

(a) reacting a compound of Formula VII with a compound of Formula VI

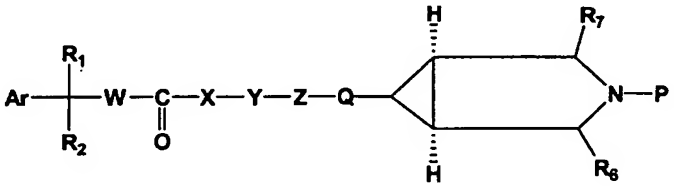


Formula VII



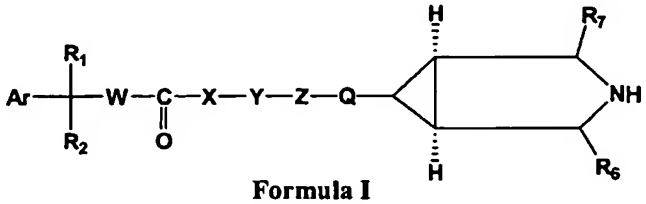
Formula VI

to give a protected compound of Formula VIII wherein Ar, R_1, R_2, W, X, Y, Z, and Q are as defined, and P is a protecting group for an amino group



Formula VIII

(b) deprotecting the compound of Formula VIII in the presence of a deprotecting agent to give compound of Formula I wherein Ar, R_1, R_2, W , X, Y, Z, and Q are as defined,



Formula I

21. The method of claim 20, wherein P is any protecting group for an amino group and is selected from the group consisting of benzyl and t-butyloxy carbonyl groups.

22. The method of claim 20, wherein the reaction of a compound of Formula VI with a compound of Formula VII to give a compound of Formula VIII is carried out in the presence of a condensing agent which is selected from the group consisting of 1-(3-dimethyl amino propyl)-3-ethyl carbodiimide hydrochloride (EDC) and 1,8-diazabicyclo [5.4.0]undec-7-ene (DBU).

23. The method of claim 20, wherein the reaction of a compound of Formula VI with a compound of Formula VII is carried out in a suitable polar aprotic solvent selected from the group consisting of N,N-dimethylformamide, dimethyl sulfoxide, toluene, and xylene.

24. The method of claim 20, wherein the reaction of compound of Formula VI with a compound of Formula VII is carried out at 0-140°C.

25. The method of claim 20, wherein the deprotection of a compound of Formula VIII is carried out with a deprotecting agent which is selected from the group consisting of palladium on carbon, trifluoroacetic acid (TFA) and hydrochloric acid.

26. The method of claim 20, wherein the deprotection of a compound of Formula VIII to give a compound of Formula I is carried out in a suitable organic solvent selected from the group consisting of methanol, ethanol, tetrahydrofuran and acetonitrile.